THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A positive pressure gas jacket apparatus for use in association with a natural gas well facility, said well facility comprising:

(a) a wellbore extending from ground surface into a subsurface gas production zone;

(b) a wellhead apparatus at the top of the wellbore;

(c) a tubing string extending from the wellhead into the wellbore, for conveying gas from the production zone, said tubing string and wellbore defining an annulus;

(d) an upstream pipeline in fluid communication with a production chamber selected from the tubing and the annulus, and connecting to the suction manifold of a gas compressor; and

(e) a downstream pipeline extending from the discharge manifold of the compressor;

said apparatus comprising:

(f) a vapour-tight enclosure defining an internal chamber surrounding the upstream pipeline; and

(g) a gas recirculation pipeline extending between a selected point on the downstream pipeline and a selected point on the vapour-tight enclosure, such that the gas recirculation pipeline is in fluid communication with both the downstream pipeline and the internal chamber of the vapour-tight enclosure;

characterized in that the upstream pipeline will be completely enveloped by pressurized natural gas introduced into the internal chamber from the downstream pipeline via the recirculation pipeline.

2. The positive pressure gas jacket apparatus of Claim 1 wherein the internal chamber of the vapour-tight enclosure surrounds portions of the wellhead apparatus conveying natural gas under negative pressure between the tubing and the upstream pipeline.

3. The positive pressure gas jacket apparatus of Claim 1, further comprising a throttling valve in the recirculation pipeline, for regulating the flow of gas from the downstream pipeline into the recirculation pipeline.

4. The positive pressure gas jacket apparatus of Claim 1, further comprising a pressure regulator valve disposed between:

(a) the internal chamber of the vapour-tight enclosure; and

(b) a well injection chamber selected from the tubing and the annulus, said injection chamber not being the production chamber;

said valve being for preventing gas pressure in the internal chamber from exceeding a selected pre-set value, by allowing gas from the internal chamber to enter the well injection chamber when the internal chamber pressure exceeds the pre-set value.

5. The positive pressure gas jacket apparatus of Claim 1 wherein the vapour-tight enclosure is of welded steel construction.

6. The positive pressure gas jacket apparatus of Claim 1, further comprising a gas-liquid separator apparatus connected into the upstream pipeline for separating liquids out of raw gas from the well, said separator apparatus having a liquid discharge line for removing separated liquids, and wherein the internal chamber of the vapour-tight enclosure surrounds the separator apparatus as well as the upstream pipeline, such that pressurized gas introduced into the internal chamber from the downstream pipeline via the recirculation pipeline will completely envelope both the separator apparatus and the discharge line.

7. The positive pressure gas jacket apparatus of Claim 6 wherein:

(a) the separator apparatus comprises a separator vessel, a blow case, and a liquid transfer line for carrying separated liquids from the separator vessel to the blow case, said blow case being a pressure vessel for accumulating the separated liquids and discharging said liquids under positive pressure; and

(b) the liquid discharge line connects to the blow case and extends therefrom through the vapour-tight enclosure for conveying liquids from the blow case under positive pressure to a liquid disposal point.

8. The positive pressure gas jacket apparatus of Claim 7 wherein the liquid discharge line conveys liquids to a storage tank.

9. The positive pressure gas jacket apparatus of Claim 7 wherein the liquid discharge line conveys liquids to the downstream pipeline at a point downstream of the connection between the recirculation pipeline and the downstream pipeline.

10. The positive pressure gas jacket apparatus of Claim 6 wherein liquids removed by the separator apparatus are discharged into the liquid discharge line under negative pressure, and wherein:

(a) the liquid discharge line connects to a vacuum pump;

(b) the vacuum pump discharges liquids under positive pressure into a liquid return line; and

(c) the internal chamber of the vapour-tight enclosure surrounds the liquid discharge line as well as the separator apparatus and the upstream pipeline, such that pressurized gas introduced into the internal chamber from the downstream pipeline via the recirculation pipeline will completely envelope the upstream pipeline, the separator apparatus, and the liquid discharge line.

11. The positive pressure gas jacket apparatus of Claim 1 wherein the well facility further comprises:

(a) a gas injection pipeline having a first end connected to and in fluid communication with the production pipeline at a point downstream of the compressor, and a second end connected in fluid communication with an injection chamber selected from the tubing and the annulus, said injection chamber not being the production chamber; and

(b) a choke, for regulating the flow of gas in the injection pipeline.

12. The apparatus of Claim 11 , further comprising a flow meter for measuring gas flow in the production chamber.

13. The apparatus of Claim 12, further comprising a flow controller associated with the flow meter, said flow controller having means for operating the choke.

14. The apparatus of Claim 13 wherein the flow controller is a pneumatically-actuated flow controller.

15. The apparatus of Claim 13 wherein the flow controller comprises a computer with a memory, and wherein:

(a) the flow controller is adapted to receive gas flow data from the flow meter, corresponding to total gas flow rates in the production chamber;

(b) the memory is adapted to store a minimum total flow rate;

(c) the computer is programmed to:

c.1 compare a total gas flow rate measured by the meter against the minimum total flow rate; and

c.2 determine a minimum gas injection rate necessary to maintain the total gas flow rate in the production chamber at or above the minimum total flow rate; and

(d) the flow controller is adapted to automatically set the choke to permit gas flow into the injection chamber at a rate not less than the minimum gas injection rate.

16. The apparatus of Claim 12 wherein the meter is installed in the production pipeline at a point downstream of the compressor.

17. The apparatus of Claim 12 wherein the meter is installed in the production pipeline at a point upstream of the compressor.

18. The apparatus of Claim 11 wherein the production chamber is the tubing, and the injection chamber is the annulus.

19. The apparatus of Claim 11 wherein the production chamber is the annulus, and the injection chamber is the tubing.

20. The apparatus of Claim 11, further comprising a back-pressure valve in the production pipeline at a point downstream of the intersection between the gas injection pipeline and the production pipeline.

21. For use in association with a natural gas well facility, said well facility comprising:

(a) a wellbore extending from ground surface into a subsurface gas production zone;

(b) a wellhead apparatus at the top of the wellbore;

(c) a tubing string extending from the wellhead into the wellbore, for conveying gas from the production zone, said tubing string and wellbore defining an annulus;

(d) an upstream pipeline in fluid communication with a production chamber selected from the tubing and the annulus, and connecting to the suction manifold of a gas compressor; and

(e) a downstream pipeline extending from the discharge manifold of the compressor;

a method of preventing air leaks into the upstream pipeline when conveying natural gas under negative pressure from the production chamber to the compressor, said method comprising the steps of:

(f) providing a vapour-tight enclosure defining an internal chamber surrounding the upstream pipeline; and

(g) providing a gas recirculation pipeline extending between a selected point on the downstream pipeline and a selected point on the vapour-tight enclosure, such that the gas recirculation pipeline is in fluid communication with both the downstream pipeline and the internal chamber of the vapour-tight enclosure;

said method being characterized in that the upstream pipeline will be completely enveloped by pressurized natural gas introduced into the internal chamber from the downstream pipeline via the recirculation pipeline.

22. The method of Claim 21 wherein the internal chamber of the vapour-tight enclosure surrounds portions of the wellhead apparatus conveying natural gas under negative pressure between the tubing and the upstream pipeline.

23. The method of Claim 21, further comprising a throttling valve in the recirculation pipeline, for regulating the flow of gas from the downstream pipeline into the recirculation pipeline.

24. The method of Claim 21, further comprising a pressure regulator valve disposed between:

(a) the internal chamber of the vapour-tight enclosure; and

(b) a well injection chamber selected from the tubing and the annulus, said injection chamber not being the production chamber;

said valve being for preventing gas pressure in the internal chamber from exceeding a selected pre-set value, by allowing gas from the internal chamber to enter the well injection chamber when the internal chamber pressure exceeds the pre-set value.

25. The method of Claim 21 wherein the vapour-tight enclosure is of welded steel construction.

26. The method of Claim 21, further comprising a gas-liquid separator apparatus connected into the upstream pipeline for separating liquids out of raw gas from the well, said separator apparatus having a liquid discharge line for removing separated liquids, and wherein the internal chamber of the vapour-tight enclosure surrounds the separator apparatus as well as the upstream pipeline, such that pressurized gas introduced into the internal chamber from the downstream pipeline via the recirculation pipeline will completely envelope both the separator apparatus and the discharge line.

27. The method of Claim 26 wherein:

(a) the separator apparatus comprises a separator vessel, a blow case, and a liquid transfer line for carrying separated liquids from the separator vessel to the blow case, said blow case being a pressure vessel for accumulating the separated liquids and discharging said liquids under positive pressure; and

(b) the liquid discharge line connects to the blow case and extends therefrom through the vapour-tight enclosure for conveying liquids from the blow case under positive pressure to a liquid disposal point.

28. The method of Claim 27 wherein the liquid discharge line conveys liquids to a storage tank.

29. The method of Claim 27 wherein the liquid discharge line conveys liquids to the downstream pipeline at a point downstream of the connection between the recirculation pipeline and the downstream pipeline.

30. The method of Claim 26 wherein liquids removed by the separator apparatus are discharged into the liquid discharge line under negative pressure, and wherein:

(a) the liquid discharge line connects to a vacuum pump;

(b) the vacuum pump discharges liquids into a under positive pressure into a liquid return line; and

(c) the internal chamber of the vapour-tight enclosure surrounds the liquid discharge line as well as the separator apparatus and the upstream pipeline, such that pressurized gas introduced into the internal chamber from the downstream pipeline via the recirculation pipeline will completely envelope the upstream pipeline, the separator apparatus, and the liquid discharge line.